

**FOURTH FIVE-YEAR REVIEW REPORT FOR  
WHITEWOOD CREEK SUPERFUND SITE  
LAWRENCE, MEADE AND BUTTE COUNTIES, SOUTH DAKOTA**



**Prepared by**

**U.S. Environmental Protection Agency  
Region 8  
Denver, Colorado**

A handwritten signature in blue ink, reading "Betsy Smidinger", is written over a horizontal line.

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9/5/17  
Date

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## LIST OF ABBREVIATIONS & ACRONYMS

ARAR	Applicable or Relevant and Appropriate Requirement
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CFR	Code of Federal Regulations
EPA	United States Environmental Protection Agency
FYR	Five-Year Review
HQ	Hazard Quotient
IC	Institutional Control
mg/kg	Milligrams per Kilogram
mg/L	Milligrams per Liter
NCP	National Contingency Plan
O&M	Operation and Maintenance
OU	Operable Unit
PRP	Potentially Responsible Party
RAO	Remedial Action Objective
ROD	Record of Decision
RPM	Remedial Project Manager
RSL	Regional Screening Level
SD DENR	South Dakota Department of Environment and Natural Resources
USGS	United States Geological Survey
UU/UE	Unlimited Use and Unrestricted Exposure

# **I. INTRODUCTION**

The purpose of a five-year review (FYR) is to evaluate the implementation and performance of a remedy to determine if the remedy is and will continue to be protective of human health and the environment. The methods, findings and conclusions of reviews are documented in FYR reports such as this one. In addition, FYR reports identify issues found during the review, if any, and document recommendations to address them.

The U.S. Environmental Protection Agency (EPA) is preparing this FYR pursuant to the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) Section 121, consistent with the National Contingency Plan (NCP) (40 Code of Federal Regulations (CFR) Section 300.430(f)(4)(ii)), and considering EPA policy.

This is the fourth FYR for the Whitewood Creek Superfund site (the Site). The triggering action for this statutory review is the completion date of the previous FYR. The FYR has been prepared because hazardous substances, pollutants or contaminants remain at the site above levels that allow for unlimited use and unrestricted exposure (UU/UE).

The Site consists of one operable unit (OU) that will be addressed in this FYR. OU1 addresses the entire site, including contaminated soil, groundwater and surface water.

The FYR was led by Kerri Fiedler, EPA remedial project manager (RPM). Participants included Joane Lineburg of the South Dakota Department of Environment and Natural Resources (SD DENR), Todd Duex and Jeff Burich of Homestake (potentially responsible party (PRP)), Pat Gochmour of Gochmour and Associates (Homestake contractor), and Johnny Zimmerman-Ward and Treat Suomi of Skeo (EPA contractor). The review began on 10/17/2016.

## **Site Background**

The Whitewood Creek Superfund site covers an 18-mile long stretch of Whitewood Creek in Lawrence, Meade and Butte counties in western South Dakota (Figure B-1). The site starts near the town of Whitewood, SD and ends where Whitewood Creek enters the Belle Fourche River. Whitewood, SD is approximately 13 miles northeast of Lead, SD, and approximately 36 miles northwest of Rapid City, SD along I-90. Whitewood Creek provides habitat for local wildlife and supports residential, recreational and agricultural uses. The land is primarily rural, and families have lived in the area for more than 40 years.

Beginning in 1877, gold mining activity in Lead, SD produced about 1 billion tons of ore from both open pit and subsurface operations. It is estimated that 25 to 37 million tons of tailings from these operations were released into Gold Run Creek, flowed into Whitewood Creek and were distributed throughout the 100-year floodplain, contaminating soil, groundwater and surface water with heavy metals. The area was found to contain elevated levels of arsenic, affecting approximately 85 people and several residences who were located in close proximity to the creek.

Cleaning up the site included excavation of 4,500 cubic yards of contaminated soil from 16 homes, disposal of the contaminated soil in an on-site landfill, institutional controls, and surface water monitoring. Remedial activities took place between 1991 and 1993. Lawrence, Meade, and Butte counties adopted ordinances in late 1993 and early 1994 that prohibited construction of new residential or commercial structures on the tailings deposits, restricted future development in tailings-impacted areas of the site, and prohibited removal and use of tailings outside the tailings areas. Surface water monitoring is ongoing. Following cleanup, EPA deleted the site from the Superfund National Priorities List (NPL) in 1996. Additional background can be found in documents listed in Appendix A.



## **FIVE-YEAR REVIEW SUMMARY FORM**

SITE IDENTIFICATION		
Site Name: Whitewood Creek		
EPA ID: SDD980717136		
Region: 8	State: South Dakota	City/County: Whitewood/Lawrence, Meade, Butte
SITE STATUS		
NPL Status: Final		
Multiple OUs? No	Has the site achieved construction completion? Yes	
REVIEW STATUS		
Lead agency: EPA		
Author name: Kerri Fiedler with contractor support provided by Skeo		
Author affiliation: EPA Region 8 and Skeo		
Review period: 10/17/2016 - 7/1/2017		
Date of site inspection: 11/2/2016		
Type of review: Statutory		
Review number: 4		
Triggering action date: 9/17/2012		
Due date ( <i>five years after triggering action date</i> ): 9/17/2017		

## **II. RESPONSE ACTION SUMMARY**

### **Basis for Taking Action**

EPA listed the site on the NPL in September 1983. The remedial investigation/feasibility study, and the 1989 Endangerment Assessment reached the following conclusions:

- Tailings deposits contained high concentrations of arsenic. However, risk to a site resident is minimal as long as the individual does not spend significant amounts of time in the tailings deposit areas.
- Some residential areas and irrigated cropland contained arsenic concentrations that present health risks to people living and working in these areas because of the large amount of time the individuals were exposed to arsenic over their lifetime.
- Ingestion of contaminated groundwater could present a risk to human health, but this risk could be eliminated if consumption of contaminated groundwater was prohibited.
- Arsenic concentrations in Whitewood Creek's surface water exceeded the applicable standards.

## **Response Actions**

EPA signed the Site's Record of Decision (ROD) on March 30, 1990 addressing soil, groundwater and surface water contamination. Remedial action objectives (RAOs) identified in the ROD include:

- Prevent site residents from ingesting surface soils of the tailings deposit areas that would pose a potential lifetime cancer risk from arsenic exceeding  $1 \times 10^{-4}$ .
- Prevent site residents from ingesting residential surface soils with an average arsenic concentration above 100 milligrams per kilogram (mg/kg).
- Prevent site residents from ingesting groundwater with an average concentration of any inorganic constituent above the maximum contaminant level.
- Continue monitoring the surface water quality and flow of Whitewood Creek at the sampling stations near Whitewood and Vale.

The remedy components selected in the 1990 ROD and revised in the 1991 Explanation of Significant Differences (ESD) included:

- Removing and/or covering soil with arsenic levels above 100 mg/kg with clean surface soil (arsenic  $< 20$  mg/kg) in frequently used residential areas.
- Disposing of the arsenic-contaminated soil in an on-site facility compliant with state and federal landfill requirements.
- Revegetating the remediated area and visually verifying that the remedial cover is intact across all remediated areas, with soil sampling as a follow-up action where necessary.
- Implementing institutional controls within the 100-year floodplain and tailings deposits.
- Prohibiting installation of groundwater wells within the 100-year floodplain.
- Conducting an annual education program to inform site residents of the potential health hazards associated with exposure to tailings, soil and groundwater contaminated with arsenic.
- Refining knowledge of the extent of contamination and delineating the 100-year floodplain of Whitewood Creek.
- Monitoring surface water.

The chemical-specific Applicable or Relevant and Appropriate Requirement (ARAR) for arsenic in groundwater and surface water of Whitewood Creek could not be achieved. For the groundwater, the ARAR is the primary drinking water standard for the state of South Dakota, and was found to be technically impracticable. The continuing enforcement of regulations prohibiting use of the groundwater as a drinking water source was found to provide adequate protection of human health and the environment. In addition, the ARAR for arsenic in surface water for the consumption of fish could not be achieved as the surface water upstream of the site also did not meet this criterion. As these ARARs could not be attained, a technically impracticable waiver was invoked under CERCLA Section 121(d)(4)(c).

A summary of the cleanup goals for the Site are presented in Table 1.

**Table 1: Arsenic Cleanup Goals Established in the 1990 ROD**

Media	Cleanup Goal	Basis
Soil	100 mg/kg	$1 \times 10^{-4}$ cancer risk and non-cancer hazard quotient (HQ) of 1 for a site-specific rural resident

Media	Cleanup Goal	Basis
Groundwater	Waived	Federal primary drinking water standards established under 40 CFR 141 and state drinking water standards established under South Dakota Administrative Rule 74:04:05 cannot be attained because of the potential for increase in risk to public health if the sources were removed and also because of the technical impracticality of meeting drinking water standards.
Surface Water	Waived	Ambient water quality criteria established under 40 CFR 131 for the consumption of fish cannot be attained because the water entering the Site does not meet the criterion.

### **Status of Implementation**

The remedy was implemented in two phases: remediation of contaminated soils in existing residential areas (Phase I) and the implementation of institutional controls to limit access to tailings and groundwater (Phase II).

Phase I - Residence Remediation: During the remedial action and based on discussions with site residents regarding their land use habits, smaller areas around each home (i.e., high use areas) were identified for remediation, rather than the entire yard/ranch. The quantity of material disposed of was 4,500 cubic yards, significantly less than the estimated amount during the development of the ROD (30,000 cubic yards).

Remediation activities at the residences began on September 30, 1991, and were completed during the fall of 1992. Construction of the disposal area began on September 30, 1991, and was completed on September 30, 1992. Contaminated soil was removed from the residences and placed in the disposal area.

Phase II - Institutional Controls: The institutional control portion of the remedy was implemented during 1993 and 1994. In accordance with the ROD's requirements, Lawrence, Meade, and Butte Counties adopted ordinances that prohibited construction of new residential or commercial structures on the tailings deposits, restricted future development in tailings-impacted areas, and prohibited removal and use of tailings outside the tailings areas. The areas with settled tailings in the stream bed and flood plain is referred to as the Tailings Deposit Area. The areas where tailings that settled onto natural soils adjacent to the flood plain is referred to as the Tailings Impacted Area. On November 29, 1993, EPA approved the Whitewood Creek Tailings Area Building Permit Handbook, which was developed to aid in the future implementation of the proposed ordinances. The handbook outlines the steps on how future residential development must comply with the County ordinances.

A state regulation prohibiting groundwater wells in the 100-year floodplain of Whitewood Creek remains in effect to limit exposure to groundwater.

In 1993, Homestake began distributing an annual fact sheet to educate the public on site hazards and ways to minimize the risk posed by residual contamination. Educational materials are still distributed annually to affected residents. Institutional controls are summarized in Table 2 and Figure B-2.

**Table 2: Summary of Planned and/or Implemented Institutional Controls (ICs)**

Media, engineered controls, and areas that do not support UU/UE based on current conditions	ICs Needed	ICs Called for in the Decision Documents	Impacted Areas	IC Objective	Title of IC Instrument Implemented and Date (or planned)
Groundwater	Yes	Yes	100-year floodplain of Whitewood Creek	Restrict installation of groundwater wells.	South Dakota Administrative Rule 74:02:04:26, well placement is restricted within the 100-year floodplain of Whitewood Creek, effective 7/16/1992 <sup>a</sup>
Tailings Deposit Areas and Tailings Impacted Areas	Yes	Yes	Tailings Deposit Areas and Tailings Impacted Areas within 100-year floodplain of Whitewood Creek	Prohibits removal of sand, soils or rock from the tailings deposits. Limits construction or placement of residential or commercial buildings on Tailings Deposit Areas. Limits construction or placement of residential buildings on Tailings Impacted Areas.	Butte County Ordinance Number 94-1, 2/9/1994 <sup>b</sup>
					Meade County Ordinance Number 16, 12/6/2011 <sup>c</sup>
					Lawrence County Ordinance 10-02, 6/6/2014 <sup>d</sup>
				Used as a guide by Lawrence, Meade and Butte counties in implementing the county ordinances.	Whitewood Creek Tailings Area Building Permit Handbook Annual Mailing to property owners within site, 6/10/1994 <sup>e</sup>
				Remind landowners of restrictions on property and to contact the PRPs if any digging is anticipated or performed.	Annual educational mailings to affected residents

**Notes:**

- Administrative rule accessed at: <http://www.sdlegislature.gov/Rules/DisplayRule.aspx?Rule=74:02:04:26> (accessed 3/1/17).
- Butte County Ordinance accessed at: <http://www.sdcounties.org/wp-content/blogs.dir/13/files/County%20Ordinances/94-1%20Whitewood%20Creek%20Tailings%20Area.pdf> (accessed 3/1/17).
- Meade County ordinance accessed at: [https://static1.squarespace.com/static/55f1f6a6e4b0fdc2e7a036d1/55f1f72be4b0abd723ecc8ee/55f1f72be4b0abd723ecc8f7/1331242166123/Ordinance\\_16\\_BuildingInTailingsAreaofWhitewoodCreek.pdf](https://static1.squarespace.com/static/55f1f6a6e4b0fdc2e7a036d1/55f1f72be4b0abd723ecc8ee/55f1f72be4b0abd723ecc8f7/1331242166123/Ordinance_16_BuildingInTailingsAreaofWhitewoodCreek.pdf) (accessed 3/1/17).
- Lawrence County Ordinance accessed at: <http://www.lawrence.sd.us/Documents/ORD%2009-04%20Lawrence%20County%20Zoning%20Ordinance.pdf> (accessed 3/1/17).
- Cited in Lawrence County Ordinance 10-02 and available on file in the Lawrence County Planning and Zoning Department.

**Systems Operations/Operation & Maintenance**

Homestake performs the following operation and maintenance (O&M) activities as required in the Whitewood Creek Superfund Site Post-Remedy Operations, Maintenance, and Reporting Plan, amended May 1, 2003:

- Submit an annual report to EPA by March 31 of each year.
- Complete residential site inspections of remediated areas every five years.
- Conduct annual site resident education program through mailings sent out during the first calendar quarter after EPA approval of an information package that summarizes the potential health hazards within the Site and the institutional controls governing the Site.
- Conduct routine visual inspections after major flood events (50-year floods) or when there may be recontamination of more than 10 percent of a high-use remediated area and remediate within one year after determination that remediation is necessary.
- Monitor surface water at two United States Geological Survey (USGS) stations on Whitewood Creek once in May (peak runoff) and once in September (late summer), with findings included in the annual report.
- Inspect the disposal area annually to assess the integrity of site fencing, vegetative cover, surface slopes, and rip-rap, with findings reported in the annual report.
- Review residential building/excavation activity on site annually.
- Submit information for the five-year review, as requested.

No properties were identified for sampling or remediation in the 2014 and 2015 annual inspection reports.

### III. PROGRESS SINCE THE LAST REVIEW

This section includes the protectiveness determinations and statements from the last FYR as well as the recommendations from the last FYR and the status of those recommendations.

**Table 3: Protectiveness Determination/Statement from the 2012 FYR**

OU #	Protectiveness Determination	Protectiveness Statement
Sitewide	Short-term Protective	<p>The remedy at the Site currently protects human health and the environment because it is functioning as intended by the Site's decision documents. The exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of remedy selection are still valid; and no other information has come to light that could call into question the protectiveness of the remedy. Contaminated soils at residences were removed or covered and access to remaining contaminated tailings is restricted. Institutional controls are in place to prevent future land uses that could damage the remedial components and to prohibit installation of groundwater wells on the Site or in the immediate vicinity of the Site.</p> <p>For the Site's remedy to be protective over the long term, the following actions are needed:</p> <ul style="list-style-type: none"> <li>• Revegetate the disposal area.</li> <li>• Remediate the three properties with geo-fabric layer breaches.</li> </ul>

**Table 4: Status of Recommendations from the 2012 FYR**

<b>OU #</b>	<b>Issue</b>	<b>Recommendations</b>	<b>Current Status</b>	<b>Current Implementation Status Description</b>	<b>Completion Date (if applicable)</b>
Sitewide	Though the disposal area vegetation has improved, the area has not been completely revegetated.	Revegetate the disposal area.	Considered But Not Implemented	According to the 2013 annual report, the disposal area was found to be 200 to 300 feet southeast of the assumed disposal location. The correct location of the disposal area was well vegetated during an April 2012 site inspection.	4/25/2012
Sitewide	Three properties where geo-fabric has been breached were not remediated within a one-year timeframe, as required by the O&M plan.	Remediate the properties where geo-fabric has been exposed. If future remediation is needed on residential properties, complete the remediation within one year.	Considered But Not Implemented	Properties where geo-fabric was breached were not remediated. The 2013 annual report stated that these breaches in the geo-fabric were not a critical component of the remediation plan and are not required to be repaired. The only arsenic exceedance in nine soil samples collected was located outside of the high use area.	3/27/2014

## IV. FIVE-YEAR REVIEW PROCESS

### **Community Notification, Involvement & Site Interviews**

A public notice was made available by posting at the local library (Appendix D) and in a local newsletter in November 2016, stating that there was a FYR and inviting the public to submit any comments to EPA. The results of the review and the report will be made available at the Site's information repository, the Whitewood Library, located at 1201 Ash Street, Whitewood, South Dakota.

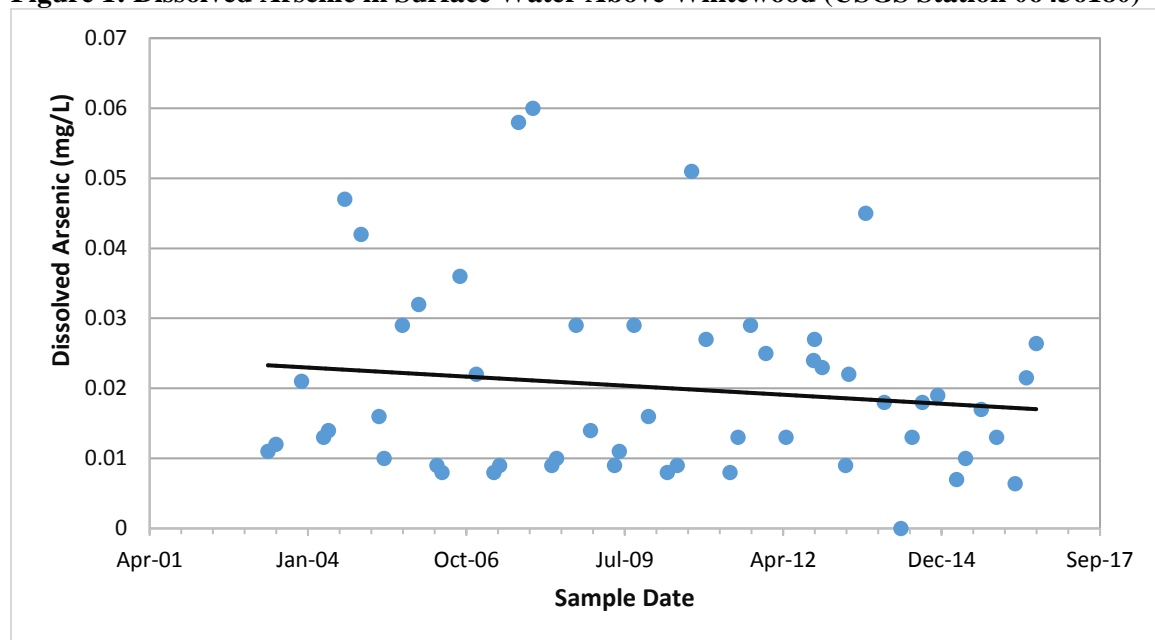
On November 3, 2016, an open house was held at the Whitewood Library to discuss the five-year review, and about 12 members of the community attended. Most interviewees felt comfortable with and well-informed about the site cleanup. Ordinances are in place to restrict land and water usage. No one reported any evidence of vandalism or trespassing. People feel the cleanup has been positive for the surrounding community because it cleaned up water and there are now fish in the stream. Community members would like to see monitoring of deeper wells to be sure downward migration that could affect the Whitewood municipal well is not occurring. EPA and the State provided community members with documentation explaining why the deep aquifer was not included in the remedy. Community members would like to be informed about additional sampling and documentation about aquifers. Complete interviews are included in Appendix G.

### **Data Review**

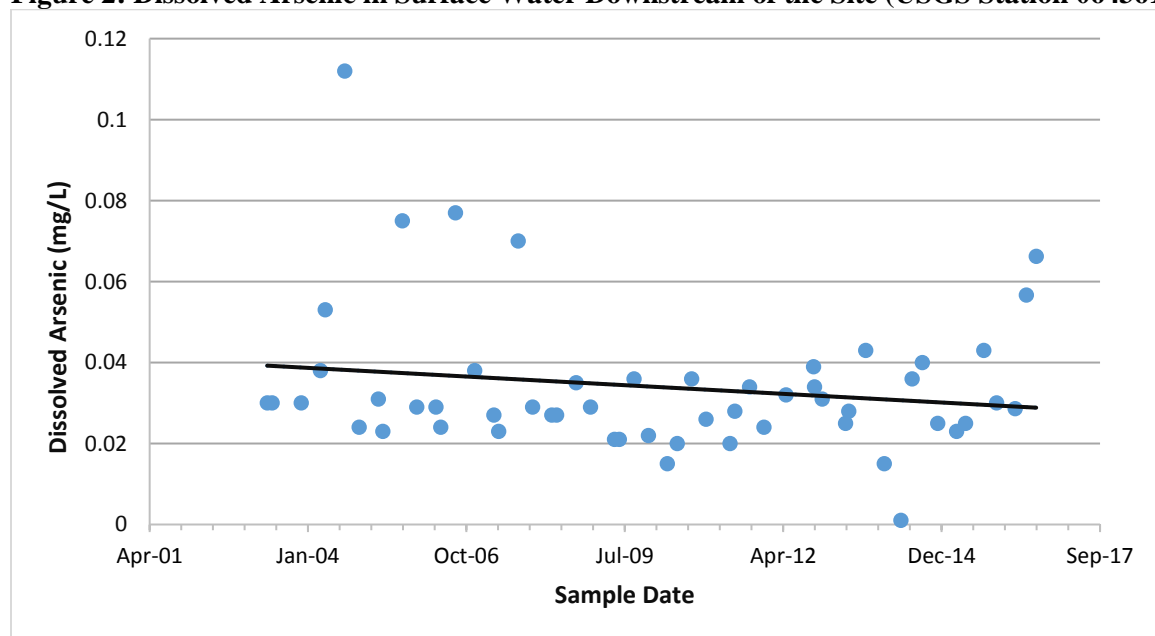
Per the ROD, surface water quality data are collected at two gauging stations along Whitewood Creek as part of long-term monitoring. One station is upstream of the Site at USGS gauging station 06436180, and referred to as Whitewood Creek above Whitewood. The second station is downstream of the Site at gauging station 06436198, and referred to as Whitewood Creek Above Vale. According to the 2003 O&M plan, surface water sampling is required during peak runoff in the spring, and during the low flow period in the late summer. The objective of measurements is to compare against past data, to ensure that those conditions have not changed to a degree that poses an unacceptable risk to human health and welfare and the environment.

Data were reviewed from 2003 to 2016 in the following trend graphs, with a focus on dissolved arsenic, per the 2003 O&M Plan. Figure 1 shows results from Whitewood Creek above Whitewood (USGS 06436180). Figure 2 shows results from the downgradient location (USGS 06436198) at the downstream end of the site boundary, above the confluence with the Belle Fourche River. As shown, spikes of dissolved arsenic are related to lower flow events, particularly in September.

**Figure 1: Dissolved Arsenic in Surface Water Above Whitewood (USGS Station 06436180)**



**Figure 2: Dissolved Arsenic in Surface Water Downstream of the Site (USGS Station 06436198)**



## **Site Inspection**

The site inspection took place on 11/2/2016. In attendance were EPA RPM Kerri Fiedler, Joane Lineburg of SD DENR, Todd Duex and Jeff Burich of Homestake, Pat Gochmour of Gochmour and Associates (Homestake contractor), and Johnny Zimmerman-Ward and Treat Suomi of Skeo. The purpose of the inspection was to assess the protectiveness of the remedy. The group toured the Site, including various portions of Whitewood Creek, all affected properties, and the disposal area. Results of the site inspection are available in the completed site inspection checklist in Appendix C. General conditions were noted and photographed (Appendix E).

Todd Duex led the site inspection and explained the status of site activities. The site inspection observed one property where the underlying geo-fabric had been cut through during utility trenching and another property had very minor erosion exposing the top of the geo-fabric due to connecting to public water. Public water connections are being added to many properties in the area. One resident with a remediated yard indicated they planned to hook up to the new water line and had not contacted the PRPs to discuss trenching. During the site inspection, the PRP asked the homeowner to be in touch when they connect so that the PRP can suggest how to deal with soils in the trenched area. Vegetation, including grass and trees, was observed along the Whitewood Creek. Tailings were observed in creek banks in some areas. The tailings disposal area was found to be well-vegetated with rip-rap protecting the bank along the creek end of the area.

As municipal water recently became available in the area, other properties may be subject to trenching soon. The PRP revised the language in the annual mailing to emphasize the need to contact them for guidance if any digging will be taking place.

Following the site inspection, Homestake returned to the two properties and took soil samples at both locations. One sampling result was below 100 mg/kg for arsenic and the other was above 100 mg/kg for arsenic. Remediation of the property with arsenic above 100mg/kg of arsenic was remediated in June 2017.

## **V. TECHNICAL ASSESSMENT**

**QUESTION A:** Is the remedy functioning as intended by the decision documents?

### **Question A Summary:**

Yes. The review of documents and the site inspection indicate that the remedy is functioning as intended by the Site's ROD and Explanation of Significant Differences.

Contaminated soils at residences were removed or covered and institutional controls restrict exposure to remaining contaminated tailings and groundwater. Homestake removed and replaced 4,500 cubic yards of contaminated soils from 16 residential yards and disposed of the contaminated soils in a disposal area in an undeveloped part of the Site. The PRP inspects these residences and the disposal site annually.

Ordinances have been passed by the three counties that prohibit building in Tailings Deposit Areas, restrict building in the Tailings Impacted Areas, and prohibit removal of materials from the Tailings Deposit Areas. The 1994 Whitewood Creek Tailings Area Building Permit Handbook is used by the counties and property owners to implement the ordinances. Groundwater wells are restricted within the 100-year floodplain of Whitewood Creek through South Dakota Administrative Rule 74:02:04:26. Additional informational institutional controls are provided to affected residents and property owners through the annual education program and mailing.

The five-year review site inspection observed two properties with soil disturbances. After the site inspection, Homestake took soil samples at both properties and one was below 100 mg/kg for arsenic and the other was above 100 mg/kg for arsenic. Homestake worked with the homeowners to remediate the soil disturbance in June 2017. The 2012 annual report noted that, based on sampling results, remediation at another residence was needed where the geo-fabric was damaged; but the 2013 annual report indicated that it was not necessary. Additional information to explain this change in requirement should have been included in the annual report to support the



decision. Annual reports should include supporting documentation, such as soil sampling results, when remediation is suggested or required at residences.

Many residents within the Site boundary are being offered the opportunity to connect to municipal water and will need to contact Homestake for guidance if trenching will occur. Homestake updated the annual mailing in 2017 to remind homeowners of this.

**QUESTION B:** Are the exposure assumptions, toxicity data, cleanup levels and remedial action objectives (RAOs) used at the time of the remedy selection still valid?

**Question B Summary:**

Yes, the RAOs, exposure assumptions and toxicity data used at the time of remedy selection are still valid. Land use has not changed, thus, the rural residential exposure assumptions outlined in the ROD remain unchanged, and the bioavailability of arsenic also remains unchanged. Thus, the cleanup goal for arsenic remains valid.

**QUESTION C:** Has any other information come to light that could call into question the protectiveness of the remedy?

No additional information has come to light that could call into question the protectiveness of the remedy.

## **VI. ISSUES/RECOMMENDATIONS**

<b>Issues/Recommendations</b>
<b>OU(s) without Issues/Recommendations Identified in the FYR:</b>
1

<b>Issues and Recommendations Identified in the FYR:</b>
None

### **OTHER FINDINGS**

A recommendation was identified during the FYR that does not affect current and/or future protectiveness:

- Include documentation in annual reports to support how geo-fabric breaches are addressed, as well as results of any confirmatory sampling.

## **VII. PROTECTIVENESS STATEMENT**

<b>Sitewide Protectiveness Statement</b>
<i>Protectiveness Determination:</i> Protective
<i>Protectiveness Statement:</i> The remedy at the Site is protective of human health and the environment. Contaminated soils at residences were removed or covered and access to remaining contaminated tailings is restricted. Institutional controls are in place to prevent future land uses that could damage the remedial components and to prohibit installation of groundwater wells on the Site or in the immediate vicinity of the Site.

## **VIII. NEXT REVIEW**

The next FYR Report for the Whitewood Creek Superfund site is required five years from the completion date of this review.

## **APPENDIX A – REFERENCE LIST**

Annual Report 2012. Whitewood Creek Superfund Site. Submitted to Remedial Project Manager, 8EPR-SR by Homestake Mining Company. March 26, 2013.

Annual Report 2013. Whitewood Creek Superfund Site. Submitted to Remedial Project Manager, 8EPR-SR by Homestake Mining Company. March 27, 2014.

Annual Report 2014. Whitewood Creek Superfund Site. Submitted to Remedial Project Manager, 8EPR-SR by Homestake Mining Company. March 30, 2015.

Annual Report 2015. Whitewood Creek Superfund Site. Submitted to Remedial Project Manager, 8EPR-SR by Homestake Mining Company. March 24, 2016.

Annual Report 2016. Whitewood Creek Superfund Site. Submitted to Remedial Project Manager, 8EPR-SR by Homestake Mining Company. March 29, 2017.

Explanation of Significant Differences. Whitewood Creek Superfund Site. Lawrence, Meade and Butte Counties, South Dakota. U. S. Environmental Protection Agency. June 1991.

Final Endangerment Assessment Summary Document for Whitewood Creek Superfund Site. Prepared by Jacobs Engineering Group Inc. Pasadena, California. July 1989.

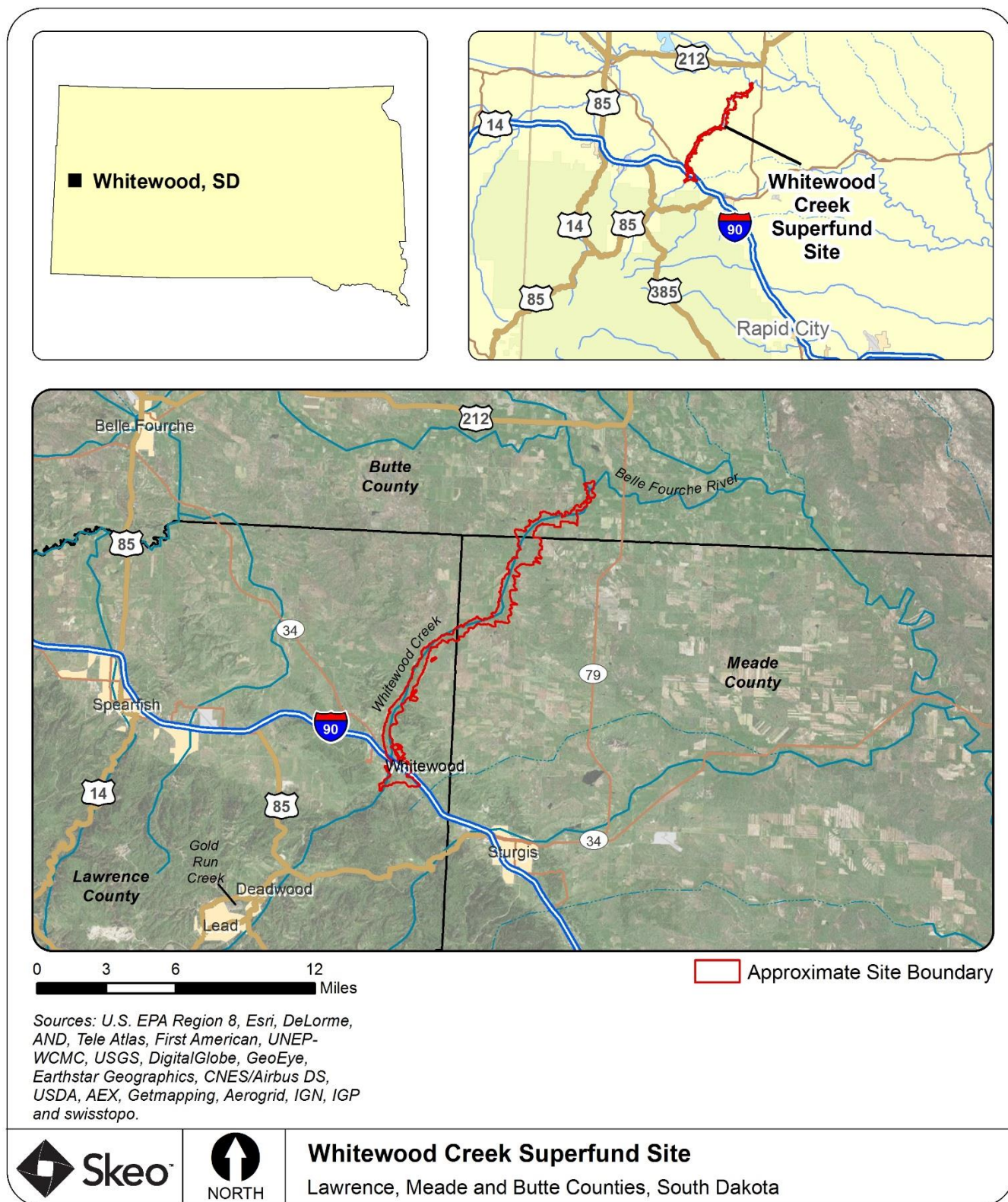
Record of Decision. OU1. Whitewood Creek Site. Lawrence, Meade, and Butte Counties, South Dakota. EPA. March 30, 1990.

Third Five Year Review Report for Whitewood Creek Superfund Site. Prepared by Skeo Solutions for U.S. Environmental Protection Agency. September 17, 2012.

Whitewood Creek Superfund Site Post-Remedy Operations, Maintenance and Reporting Plan. Submitted to: U.S. Environmental Protection Agency, Region VIII, Rebecca Thomas, Remedial Project Manager by Homestake Mining Company. Amended May 1, 2003.

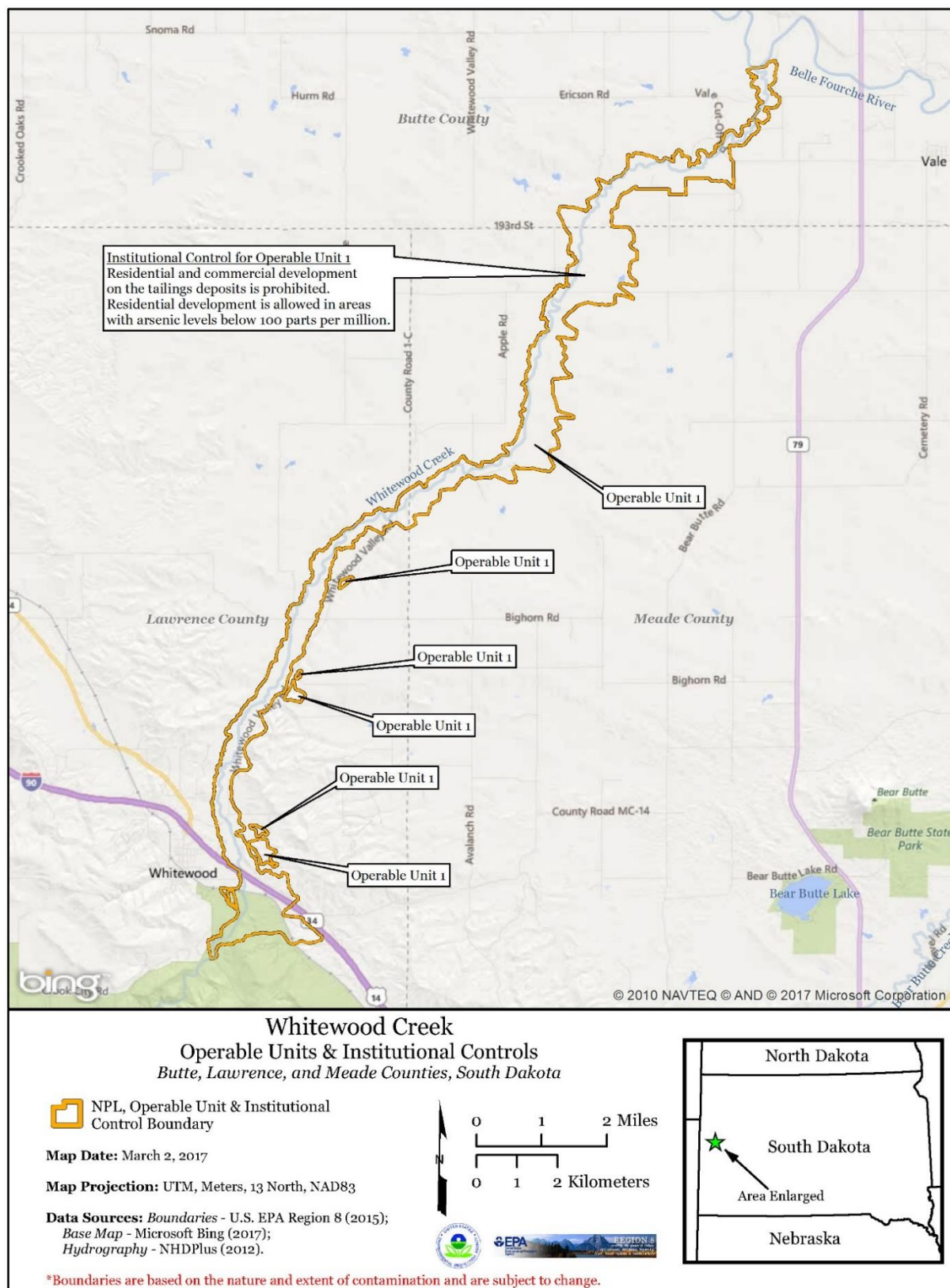
## APPENDIX B – SITE MAPS

Figure B-1: Site Vicinity Map



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.

**Figure B-2: Institutional Controls Map**



Disclaimer: This map and any boundary lines within the map are approximate and subject to change. The map is not a survey. The map is for informational purposes only regarding EPA's response actions at the Site.



## APPENDIX C – SITE INSPECTION CHECKLIST

<b>FIVE-YEAR REVIEW SITE INSPECTION CHECKLIST</b>		
<b>I. SITE INFORMATION</b>		
<b>Site Name:</b> <u>Whitewood Creek</u>	<b>Date of Inspection:</b> <u>11/02/2016</u>	
<b>Location and Region:</b> <u>Whitewood, South Dakota 8</u>	<b>EPA ID:</b> <u>SDD980717136</u>	
<b>Agency, Office or Company Leading the Five-Year Review:</b> <u>EPA</u>	<b>Weather/Temperature:</b> <u>Sunny and in the 50s</u>	
<b>Remedy Includes:</b> (Check all that apply) <div style="display: flex; flex-wrap: wrap;"> <div style="width: 50%;"> <input checked="" type="checkbox"/> Landfill cover/containment  <input type="checkbox"/> Access controls  <input checked="" type="checkbox"/> Institutional controls  <input type="checkbox"/> Groundwater pump and treatment  <input type="checkbox"/> Surface water collection and treatment  <input checked="" type="checkbox"/> Other: <u>Surface water monitoring</u> </div> <div style="width: 50%;"> <input type="checkbox"/> Monitored natural attenuation  <input type="checkbox"/> Groundwater containment  <input type="checkbox"/> Vertical barrier walls           </div> </div>		
<b>Attachments:</b> <input type="checkbox"/> Inspection team roster attached <input type="checkbox"/> Site map attached		
<b>II. INTERVIEWS</b> (check all that apply)		
<b>1. O&amp;M Site Manager</b> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 30%;">Name _____</div> <div style="width: 30%;">Title _____</div> <div style="width: 30%;">Date _____</div> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____ Problems, suggestions <input type="checkbox"/> Report attached: _____		
<b>2. O&amp;M Staff</b> <div style="display: flex; justify-content: space-between; margin-top: 5px;"> <div style="width: 30%;">Name _____</div> <div style="width: 30%;">Title _____</div> <div style="width: 30%;">Date _____</div> </div> Interviewed <input type="checkbox"/> at site <input type="checkbox"/> at office <input type="checkbox"/> by phone    Phone: _____ Problems/suggestions <input type="checkbox"/> Report attached: _____		
<b>3. Local Regulatory Authorities and Response Agencies</b> (i.e., state and tribal offices, emergency response office, police department, office of public health or environmental health, zoning office, recorder of deeds, or other city and county offices). Fill in all that apply.		
Agency <u>South Dakota Department of Environment and Natural Resources</u> Contact <u>Joane Lineburg</u> <u>11/3/2016</u> <u>Joane.Lineburg@state.sd.us</u> Name                                      Date                                      E-mail  Problems/suggestions <input type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>		
Agency <u>PRP - Homestake/Barrick</u> Contact <u>Todd Duex</u> <u>11/3/2016</u> <u>TDuex@barrick.com</u> Name                                      Date                                      E-mail  Problems/suggestions <input type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>		
Agency <u>Meade County Equalization/Planning Department</u> Contact <u>Bill Rich</u> <u>11/3/2016</u> <u>605-347-3818</u> Name                                      Date                                      Phone No.  Problems/suggestions <input type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>		
Agency <u>Lawrence County Planning and Zoning</u> Contact <u>Amber Vogt</u> <u>11/3/2016</u> <u>605-578-3871</u> Name                                      Date                                      Phone No.		

Problems/suggestions <input type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>			
Agency <u>Butte County Planning and Equalization</u>			
Contact	<u>Lisa Nelson</u>	<u>11/22/2016</u>	<u>605-892-3950</u>
	Name	Date	Phone No.
Problems/suggestions <input type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>			
<b>4. Other Interviews</b> (optional) <input checked="" type="checkbox"/> Report attached: <u>See Appendix G for a completed interview form</u>			
Residents meeting at Whitewood Creek Library on 11/03/2016			
<b>III. ON-SITE DOCUMENTS AND RECORDS VERIFIED</b> (check all that apply)			
<b>1. O&amp;M Documents</b>			
<input type="checkbox"/> O&M manual	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> As-built drawings	<input checked="" type="checkbox"/> Readily available	<input checked="" type="checkbox"/> Up to date	<input type="checkbox"/> N/A
<input type="checkbox"/> Maintenance logs	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>2. Site-Specific Health and Safety Plan</b>			
<input type="checkbox"/> Contingency plan/emergency response plan	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>3. O&amp;M and OSHA Training Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>4. Permits and Service Agreements</b>			
<input type="checkbox"/> Air discharge permit	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Effluent discharge	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Waste disposal, POTW	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Other permits: _____	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>5. Gas Generation Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>6. Settlement Monument Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>7. Groundwater Monitoring Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>8. Leachate Extraction Records</b>			
	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			
<b>9. Discharge Compliance Records</b>			
<input type="checkbox"/> Air	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
<input type="checkbox"/> Water (effluent)	<input type="checkbox"/> Readily available	<input type="checkbox"/> Up to date	<input checked="" type="checkbox"/> N/A
Remarks: _____			

10. <b>Daily Access/Security Logs</b> Remarks: _____	<input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input checked="" type="checkbox"/> N/A								
<b>IV. O&amp;M COSTS</b>									
1. <b>O&amp;M Organization</b> <div style="display: flex; justify-content: space-between;"> <div style="width: 48%;"> <input type="checkbox"/> State in-house  <input type="checkbox"/> PRP in-house  <input type="checkbox"/> Federal facility in-house  <input type="checkbox"/> _____         </div> <div style="width: 48%;"> <input type="checkbox"/> Contractor for state  <input checked="" type="checkbox"/> Contractor for PRP  <input type="checkbox"/> Contractor for Federal facility         </div> </div>									
2. <b>O&amp;M Cost Records</b> <input type="checkbox"/> Readily available <input type="checkbox"/> Up to date <input type="checkbox"/> Funding mechanism/agreement in place <input checked="" type="checkbox"/> Unavailable Original O&M cost estimate: \$/year <input type="checkbox"/> Breakdown attached									
3. <b>Unanticipated or Unusually High O&amp;M Costs during Review Period</b> Describe costs and reasons: _____									
<b>V. ACCESS AND INSTITUTIONAL CONTROLS</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A									
<b>A. Fencing</b>									
1. <b>Fencing Damaged</b> <input type="checkbox"/> Location shown on site map <input type="checkbox"/> Gates secured <input checked="" type="checkbox"/> N/A Remarks: _____									
<b>B. Other Access Restrictions</b>									
1. <b>Signs and Other Security Measures</b> <input type="checkbox"/> Location shown on site map <input checked="" type="checkbox"/> N/A Remarks: _____									
<b>C. Institutional Controls (ICs)</b>									
1. <b>Implementation and Enforcement</b> Site conditions imply ICs not properly implemented <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> N/A Site conditions imply ICs not being fully enforced <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No <input type="checkbox"/> N/A Type of monitoring (e.g., self-reporting, drive by): <u>drive by</u> Frequency: <u>Annual</u> Responsible party/agency: <u>PRP</u> <table style="width: 100%; margin-top: 10px;"> <tr> <td style="width: 25%;">Contact</td> <td style="width: 25%; border-bottom: 1px solid black;"></td> <td style="width: 25%; border-bottom: 1px solid black;"></td> <td style="width: 25%; border-bottom: 1px solid black;"></td> </tr> <tr> <td style="text-align: center;">Name</td> <td style="text-align: center;">Title</td> <td style="text-align: center;">Date</td> <td style="text-align: center;">Phone no.</td> </tr> </table> <div style="margin-top: 10px;">           Reporting is up to date                      <input type="checkbox"/> Yes    <input type="checkbox"/> No    <input checked="" type="checkbox"/> N/A            Reports are verified by the lead agency                      <input type="checkbox"/> Yes    <input type="checkbox"/> No    <input checked="" type="checkbox"/> N/A            Specific requirements in deed or decision documents have been met                      <input checked="" type="checkbox"/> Yes    <input type="checkbox"/> No    <input type="checkbox"/> N/A            Violations have been reported                      <input type="checkbox"/> Yes    <input checked="" type="checkbox"/> No    <input type="checkbox"/> N/A            Other problems or suggestions: <input type="checkbox"/> Report attached         </div>		Contact				Name	Title	Date	Phone no.
Contact									
Name	Title	Date	Phone no.						
2. <b>Adequacy</b> <input type="checkbox"/> ICs are adequate <input checked="" type="checkbox"/> ICs are inadequate <input type="checkbox"/> N/A Remarks: <u>During the FYR site inspection, electrical work being performed on a property had exposed underlying</u>									



geo-fabric. Another property had recent excavations on site for new water lines. A third property was in the process of getting hooked up to public water and would be digging through the yard to connect to the house. The homeowner had not intended on calling about digging. The institutional controls may need to be adjusted to encourage homeowners to contact Homestake if any digging will occur on the property.

#### D. General

1. **Vandalism/Trespassing** ☐ Location shown on site map ☒ No vandalism evident

Remarks: \_\_\_\_\_

2. **Land Use Changes On Site** ☒ N/A

Remarks: \_\_\_\_\_

3. **Land Use Changes Off Site** ☒ N/A

Remarks: \_\_\_\_\_

#### VI. GENERAL SITE CONDITIONS

A. **Roads** ☒ Applicable ☐ N/A

1. **Roads Damaged** ☐ Location shown on site map ☒ Roads adequate ☐ N/A

Remarks: \_\_\_\_\_

#### B. Other Site Conditions

Remarks: \_\_\_\_\_

#### VII. LANDFILL COVERS ☒ Applicable ☐ N/A

##### A. Landfill Surface

1. **Settlement** (low spots) ☐ Location shown on site map ☒ Settlement not evident

Arial extent: \_\_\_\_\_

Depth: \_\_\_\_\_

Remarks: \_\_\_\_\_

2. **Cracks** ☐ Location shown on site map ☒ Cracking not evident

Lengths: \_\_\_\_\_

Widths: \_\_\_\_\_

Depths: \_\_\_\_\_

Remarks: \_\_\_\_\_

3. **Erosion** ☐ Location shown on site map ☒ Erosion not evident

Arial extent: \_\_\_\_\_

Depth: \_\_\_\_\_

Remarks: \_\_\_\_\_

4. **Holes** ☐ Location shown on site map ☒ Holes not evident

Arial extent: \_\_\_\_\_

Depth: \_\_\_\_\_

Remarks: \_\_\_\_\_

5. **Vegetative Cover** ☒ Grass ☐ Cover properly established

☐ No signs of stress

☐ Trees/shrubs (indicate size and locations on a diagram)

Remarks: \_\_\_\_\_

6. **Alternative Cover** (e.g., armored rock, concrete) ☒ N/A

Remarks: \_\_\_\_\_

7. **Bulges** ☐ Location shown on site map ☒ Bulges not evident

Arial extent: \_\_\_\_\_

Height: \_\_\_\_\_

Remarks: _____			
8.	<b>Wet Areas/Water Damage</b>	<input checked="" type="checkbox"/> Wet areas/water damage not evident	
9.	<b>Slope Instability</b>	<input type="checkbox"/> Slides	<input type="checkbox"/> Location shown on site map
<input checked="" type="checkbox"/> No evidence of slope instability			
Aerial extent: _____			
Remarks: _____			
<b>B. Benches</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
(Horizontally constructed mounds of earth placed across a steep landfill side slope to interrupt the slope in order to slow down the velocity of surface runoff and intercept and convey the runoff to a lined channel.)			
<b>C. Letdown Channels</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
(Channel lined with erosion control mats, riprap, grout bags or gabions that descend down the steep side slope of the cover and will allow the runoff water collected by the benches to move off of the landfill cover without creating erosion gullies.)			
<b>D. Cover Penetrations</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>E. Gas Collection and Treatment</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>F. Cover Drainage Layer</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>G. Detention/Sedimentation Ponds</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>H. Retaining Walls</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>I. Perimeter Ditches/Off-Site Discharge</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>VIII. VERTICAL BARRIER WALLS</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>IX. GROUNDWATER/SURFACE WATER REMEDIES</b> <input checked="" type="checkbox"/> Applicable <input type="checkbox"/> N/A			
<b>A. Groundwater Extraction Wells, Pumps and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>B. Surface Water Collection Structures, Pumps and Pipelines</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>C. Treatment System</b> <input type="checkbox"/> Applicable <input checked="" type="checkbox"/> N/A			
<b>D. Monitoring Data</b>			
<b>1. Surface Water Monitoring Data</b>			
<input checked="" type="checkbox"/> Is routinely submitted on time		<input checked="" type="checkbox"/> Is of acceptable quality	
<b>2. Monitoring Data Suggests:</b>			
<input type="checkbox"/> Groundwater plume is effectively contained		<input checked="" type="checkbox"/> Contaminant concentrations are declining	
<b>E. Monitored Natural Attenuation</b>			
<b>1. Monitoring Wells</b> (natural attenuation remedy)			
<input type="checkbox"/> Properly secured/locked	<input type="checkbox"/> Functioning	<input type="checkbox"/> Routinely sampled	<input type="checkbox"/> Good condition
<input type="checkbox"/> All required wells located	<input type="checkbox"/> Needs maintenance	<input checked="" type="checkbox"/> N/A	
Remarks: _____			
<b>X. OTHER REMEDIES</b>			
If there are remedies applied at the site and not covered above, attach an inspection sheet describing the physical nature and condition of any facility associated with the remedy. An example would be soil vapor extraction.			
<b>XI. OVERALL OBSERVATIONS</b>			
<b>A. Implementation of the Remedy</b>			

<p>Describe issues and observations relating to whether the remedy is effective and functioning as designed. Begin with a brief statement of what the remedy is designed to accomplish (e.g., to contain contaminant plume, minimize infiltration and gas emissions).</p> <p><u>The remedy was designed to prevent exposure to contaminated soils. During the site inspection, one residence was observed to have protective cover that was exposed during trenching for electrical work. Additionally, another resident indicated they would soon be trenching in the yard to connect to new public water. They had not planned on contacting Homestake until notified that they should during the site inspection. Informational institutional controls may need to be adjusted to encourage landowners to contact the PRP for any digging on the affected properties. Homestake has revised their annual mailings to remind homeowners to contact them for guidance if trenching is to occur.</u></p>
<p><b>B. Adequacy of O&amp;M</b></p> <p>Describe issues and observations related to the implementation and scope of O&amp;M procedures. In particular, discuss their relationship to the current and long-term protectiveness of the remedy.</p> <p><u>O&amp;M is adequate, although annual reports should be updated to include documentation, such as sampling results, to support changes in addressing breaches in geo-fabric.</u></p>
<p><b>C. Early Indicators of Potential Remedy Problems</b></p> <p>Describe issues and observations such as unexpected changes in the cost or scope of O&amp;M or a high frequency of unscheduled repairs that suggest that the protectiveness of the remedy may be compromised in the future.</p> <p><u>None</u></p>
<p><b>D. Opportunities for Optimization</b></p> <p>Describe possible opportunities for optimization in monitoring tasks or the operation of the remedy.</p> <p><u>None</u></p>

Site Inspection Team:

Kerri Fiedler, EPA

Joane Lineburg, SD DENR

Todd Duex, Homestake

Jeff Burich, Homestake

Pat Gochnour, Gochnour and Associates

Johnny Zimmerman-Ward, Skeo

Treat Suomi, Skeo

## APPENDIX D – PRESS NOTICE



### NOTICE OF FIVE-YEAR REVIEW

#### **Whitewood Creek Superfund Site Whitewood, Lawrence County, South Dakota**

The Whitewood Creek Superfund Site consists of an 18-mile stretch of Whitewood Creek, from the Crook City Bridge in Lawrence County, into Meade County, to the confluence with the Belle Fourche River in Butte County. The Environmental Protection Agency (EPA) placed the site on its National Priorities List (NPL) for cleanup and remediation on September 8, 1983. The site was deleted from the NPL on August 13, 1996.

In September 2012, EPA completed its third five-year review of the site, which determined the remedy remained protective of human health and the environment. That review is available at the information repositories listed below.

To find out more about the site, the five-year review process and to provide input on the effectiveness of the remedy in place, EPA is holding an open house on Thursday November 3, 2016 at the Whitewood Library, 1201 Ash St, Whitewood, SD 57793 from 6:30-8:30 pm.

**Comments for the 2017 five-year review should be received by January 31, 2017.**

**To submit comments on the site, or obtain more information, contact:**

Kerri Fiedler, EPA Project Manager

Toll free: (800) 227-8917 ext. 312-6493

or (303) 312-6493

[fiedler.kerri@epa.gov](mailto:fiedler.kerri@epa.gov)

Joane Lineburg, South Dakota Department of  
Environment

& Natural Resources Project Manager

Phone: (605) 773-3296

[joane.lineburg@state.sd.us](mailto:joane.lineburg@state.sd.us)

Chris Wardell, EPA Community Involvement

Toll free: (800) 227-8917 ext. 312-6062

or (303) 312-6062

[Wardell.christopher@epa.gov](mailto:Wardell.christopher@epa.gov)

When complete, the 2017 five-year review for the Whitewood Creek Superfund Site will be placed in the following information repositories for reference and review by the public:

Whitewood Library  
1201 Ash St,  
Whitewood, SD 57793

EPA Superfund Records Center  
1595 Wynkoop Street  
Denver, CO 80202-1129

For more information visit: [www.epa.gov/superfund/whitewood-creek](http://www.epa.gov/superfund/whitewood-creek)



## APPENDIX E – SITE INSPECTION PHOTOS



Whitewood Creek at start of the Site at Crook City Bridge





Remediated property



Remediated driveway and property





New hydrant and signage where water lines are being added to some properties along the Site



Siphon on Whitewood Creek





Utility trenching that cut through fabric at remediated property identified during November 2016 site inspection





Unoccupied property owned by Homestake. Buildings to be demolished in 2017.





Whitewood Creek near tailings disposal area



Tailings disposal area

## **APPENDIX F – DETAILED APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS (ARARS) REVIEW**

The 1990 ROD identified ARARs for the Site as follows.

### Groundwater

The 1990 ROD states that “due to the nature and extent of contamination, it is unlikely that any alternative would achieve compliance with the National Primary Drinking Water Standards and the State of South Dakota Drinking Water Standards with respect to arsenic and occasionally cadmium and selenium.” Therefore, there are no groundwater ARARs associated with this Site.

### Surface Water

The 1990 ROD did not establish chemical-specific ARARs for surface water.

### Soil

The 1990 ROD did not establish chemical-specific ARARs for soil.

## APPENDIX G – INTERVIEW FORMS

Whitewood Creek Superfund Site		Five-Year Review Interview Form	
Site Name:	<u>Whitewood Creek</u>	EPA ID No.:	<u>SDD980717136</u>
Interviewer Name:	<u>Kerri Fiedler</u>	Affiliation:	<u>EPA</u>
Subject Name:	<u>Todd Duex</u>	Affiliation:	<u>Homestake/Barrick</u>
Subject Contact Information:			
Time:	<u>8:15 P.M.</u>	Date:	<u>November 3, 2016</u>
Interview Location:	<u>Whitewood Library</u>		
Interview Format (circle one):	<u>In Person</u>	Phone	Mail
			Other:

**Interview Category:** **Potentially Responsible Parties (PRPs)**

1. What is your overall impression of the remedial activities at the Site?

I think that it is meeting the design criteria for keeping the tailings stable and keeping people from building on them.

2. What have been the effects of this Site on the surrounding community, if any?

I think generally positive because it cleaned up water and is still in agricultural use.

3. What is your assessment of the current performance of the remedy in place at the Site?

Very good.

4. Are you aware of any complaints or inquiries regarding environmental issues or the remedial action from residents since implementation of the cleanup?

Some minor ones and we address as needed.

5. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

I feel pretty comfortable.

6. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

Nope I think it's working well.

7. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Yes

**Whitewood Creek Superfund Site****Five-Year Review Interview Form****Site Name:** Whitewood Creek**EPA ID No.:** SDD980717136**Interviewer Name:** Kerri Fiedler**Affiliation:** EPA**Subject Name:** Joane Lineburg**Affiliation:** SD DENR**Subject Contact Information:****Time:** 8:15 P.M.**Date:** November 3, 2016**Interview Location:** Whitewood Library**Interview Format (circle one):**      **In Person**      **Phone**      **Mail**      **Other:****Interview Category:**      **State Agency**

1. What is your overall impression of the project, including cleanup, maintenance and reuse activities (as appropriate)?

I think it's been working well, we get a few questions asking about location of new property versus the tailings but no one ever calls me and says "hey the Homestake people are not doing what we want or what they're supposed to."

2. What is your assessment of the current performance of the remedy in place at the Site?

It looks like the remedies are all holding up very well and when there's a problem they get fixed the way they're supposed to. Sounds like the institutional controls are working the way they're supposed to.

3. Are you aware of any complaints or inquiries regarding site-related environmental issues or remedial activities from residents in the past five years?

Nobody calls me to complain.

4. Has your office conducted any site-related activities or communications in the past five years? If so, please describe the purpose and results of these activities.

No.

5. Are you aware of any changes to state laws that might affect the protectiveness of the Site's remedy?

No.

6. Are you comfortable with the status of the institutional controls at the Site? If not, what are the associated outstanding issues?

Yes.

7. Are you aware of any changes in projected land use(s) at the Site?

No. I haven't heard anything. I know the remaining of tailings keeps fluttering up every now and then.

8. Do you have any comments, suggestions or recommendations regarding the management or operation of the Site's remedy?

No, judging from public input, they're getting the information that they're needing.

9. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Yes

**Whitewood Creek Superfund Site****Five-Year Review Interview Form****Site Name:** Whitewood Creek**EPA ID No.:** SDD980717136**Interviewer Name:** Kerri Fiedler**Affiliation:** EPA**Subject Name:** Bill Rich**Affiliation:** Meade County  
Equalization/Planning  
Department**Subject Contact Information:** 605-347-3818**Time:** 3:00 P.M.**Date:** November 3, 2016**Interview Location:** Meade County Equalization/Planning Department Office**Interview Format (circle one):** In Person      Phone      Mail      Other:**Interview Category:** Local Government

1. Are you aware of any issues at the Site and have you had any inquiries in last five years?

We have no issues with the Site. We had one person who wanted to build a garage or pole barn, but when I looked at the maps, he was outside of the restricted areas, so it was not a problem. One person asked if we can pave and build something in the restricted area, but we tell them it is up to EPA and depends on the extent of work. But that person never followed through. The ordinances say you cannot build on those areas. We do not have zoning in Meade County.

Gold Stake expressed interest in digging up the tailings and re-mining. We wrote up an ordinance on stormwater control and would require them to submit a plan. It limits the creek frontage they can disturb.

Currently, we received the maps from Homestake, but they aren't yet included on our online maps.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

I think so, I know I can always go to Barrick if I have any questions.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

I have not heard of any.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Not that I am aware of. We have the stormwater ordinance and we are working on trying to stay ahead of what might be coming in regards to EPA's Clean Water Act.

5. Are you aware of any changes in projected land use(s) at the Site?

No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

Yes, it is fine as is. I know how to get in touch with EPA if needed.



7. Do you have any comments, suggestions or recommendations regarding the project?

What is the long-term plan?

EPA response: Contamination will remain in place and EPA is required to come out each five years to ensure the remedy remains protective.

8. What institutional control programs are in place?

The ordinance that does not allow any building or construction activities.

9. What documents do you rely on to implement institutional controls?

Ordinance.

10. Does your county issue occupancy permits?

Yes.

11. What do you do to implement the building permit ordinances?

We issue building permits; see the ordinance available online.

12. Bear Butte Valley Water, Inc. has added water lines to many properties within the Site. Does the County work with utilities to notify them of the remediated areas?

Not unless they come to us and ask. It would be triggered if the work is in areas of our right of ways or road crossings.

We could add something to the website. If they do their due diligence, they'll be aware of the ordinance.

The Bear Butte Water attorney is aware of the ordinance and is on the county planning board.

13. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Yes

**Whitewood Creek Superfund Site****Five-Year Review Interview Form****Site Name:** Whitewood Creek**EPA ID No.:** SDD980717136**Interviewer Name:** Kerri Fiedler**Affiliation:** EPA**Subject Name:** Amber Vogt**Affiliation:** Lawrence County Planning  
and Zoning**Subject Contact Information:** 605-578-3871**Time:** 9:00 A.M.**Date:** November 3, 2016**Interview Location:** Lawrence County Planning and Zoning Office**Interview Format (circle one):** In Person      Phone      Mail      Other:**Interview Category:** Local Government

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Yes, nothing new has happened recently.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Yes, we work well with Barrick staff.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

No.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

No.

5. Are you aware of any changes in projected land use(s) at the Site?

No.

6. Has EPA kept involved parties and surrounding neighbors informed of activities at the Site? How can EPA best provide site-related information in the future?

We hear from EPA each five years, which is fine as we are in contact with Barrick in the interim.

7. Do you have any comments, suggestions or recommendations regarding the project?

No.

8. What institutional control programs are in place?

Lawrence County has an ordinance that restricts building within the Site. We will not issue a building permit if one comes in within that zone, which is also available on our online GIS site. If a permit does come in, we work to ensure the specific requirements are followed for building within that area.

9. What documents do you rely on to implement institutional controls?

The ordinance, the GIS layer, the annual mailing from Barrick, and the handbook.

10. Does your county issue occupancy permits?

Yes.

11. Have there been any permit requests within the Site within the last five years?

No, we had one seven to eight years ago and dealt with it appropriately.

12. Will the county be replacing the bridge near the lumber yard in Whitewood?

No, there are no current plans to do replace that bridge. If permitted in the future, the county highway department will coordinate with Barrick to deal with it appropriately.

13. Bear Butte Valley Water, Inc. has added water lines to many properties within the Site, does the County work with utilities to notify them of the remediated areas?

No, the County would only be notified if it was on a County property right of way and utilities are being run on private properties. But the County has notified some of the utilities of the availability of the GIS map online and encouraged them to check it.

14. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Yes.

**Whitewood Creek Superfund Site****Site Name:** Whitewood Creek**Five-Year Review Interview Form****EPA ID No.:** SDD980717136**Interviewer Name:** Kerri Fiedler**Affiliation:** EPA**Subject Name:** Lisa Nelson**Affiliation:** Butte County Planning and  
Equalization**Subject Contact Information:** (605) 892-3950**Time:** 2:00PM**Date:** November 22, 2016**Interview Location:** Phone**Interview Format (circle one):**      **In Person**      Phone      **Mail**      **Other:****Interview Category:**      **Local Government**

1. Are you aware of the former environmental issues at the Site and the cleanup activities that have taken place to date?

Yes, I have been filled in on what has happened out there. We have the ordinance on the web site. I just had an overlay added to our maps of that area as well. We are in the process of getting it downloaded although it is not publicly available yet. Waiting to get it live online within next the few weeks.

2. Do you feel well-informed regarding the Site's activities and remedial progress? If not, how might EPA convey site-related information in the future?

Yes, with the annual reports and now with our GIS mapping system. As much information we can get is always helpful and we can now help landowners.

3. Have there been any problems with unusual or unexpected activities at the Site, such as emergency response, vandalism or trespassing?

No, not aware of any.

4. Are you aware of any changes to state laws or local regulations that might affect the protectiveness of the Site's remedy?

Just what we have in the form of an ordinance.

5. Are you aware of any changes in projected land use(s) at the Site?

No, I haven't heard of anything.

6. How can EPA best provide site-related information in the future?

Not that I'm aware of, of course we always make phone calls if we have any questions. Information we have is very thorough, maps are very helpful and it's good information for us. If something changes I'm sure you'll let us know.

7. Do you have any comments, suggestions or recommendations regarding the project?

No.

8. What institutional control programs are in place?

I am fairly new to this (two years), but we get the informational packets usually every year, but I do not have 2016 yet. It goes to the auditor Elaine Jensen and she might have it in her office. I have all years except 2016.

If a building permit request comes in, we find out what township, range section they are in, and/or address. With our GIS overlay we can see what areas are affected by the tailings deposits and impacted areas. In our ordinance, we do not allow building or structures built within those areas. We would deny the permit. But we haven't had that happen yet. I believe we'd call EPA if that does happen to make sure nothing has changed. But we have received no requests within the last two years.

9. What documents do you rely on to implement institutional controls?

Ordinance and GIS mapping.

10. Does your county issue occupancy permits?

Yes.

11. Could utilities trigger the ordinance?

There is no code enforcement or zoning in the county, but septic permits have to be obtained through us. Water lines are not obtained through us but I would hope that our utility companies would bring that to our attention.

12. Do you consent to have your name included along with your responses to this questionnaire in the FYR report?

Sure, absolutely.

<b>Whitewood Creek Superfund Site</b>		<b>Five-Year Review Interview Form</b>		
<b>Site Name:</b> <u>Whitewood Creek</u>		<b>EPA ID No.:</b> <u>SDD980717136</u>		
<b>Interviewer Name:</b> <u>Kerri Fiedler</u>		<b>Affiliation:</b> <u>EPA</u>		
<b>Subject Name:</b> <u>Community Residents</u>		<b>Affiliation:</b> <u>Whitewood</u>		
<b>Time:</b> <u>6:30 P.M.</u>		<b>Date:</b> <u>November 3, 2016</u>		
<b>Interview Location:</b> <u>Whitewood Library</u>				
<hr/>				
<b>Interview Format (circle one):</b>		<u>In Person</u>	Phone	Mail     Other:
<hr/>				
<b>Interview Category:</b>		<b>Residents</b>		

On November 3, 2016, an open house was held at the Whitewood Library to discuss the five-year review where 12 residents attended.

1. Do you have any comments, suggestions or recommendations regarding any aspects of the project?

Community member would like to see monitoring of some wells that are a bit deeper to ensure there is no downward migration, or the potential for downward migration that might eventually affect the Whitewood municipal well. There are concerns with arsenic possibly contaminating deeper aquifers. Community members asked if any groundwater sampling occurs.

- Response: EPA and the State explained that they do not test groundwater because it is not part of the Superfund site. The remedy identified in the ROD calls for surface water monitoring, removing/covering contaminated soil, and ICs, not groundwater monitoring. EPA and the State will share information from original documentation to see how they addressed the issue of potential contamination getting into deeper aquifers.

Community would appreciate being kept in the loop if there is any additional sampling as well as documentation about the aquifers.

Community member indicated that in the past, the creek was way worse. Sewage from five communities was dumped in creek. It was a bad situation and a lot of progress was made. The community member is happy to see fish in the creek, which was a big improvement.

Community member concerned that just because it was better, does not mean it is safe now for children.

- Response: EPA and the State reminded community members of institutional controls in place that restrict new construction in affected areas. There are well placement restrictions within the 100-year flood plain along entire length of Whitewood Creek. Shallow wells are prohibited, but a deeper well could be installed, following regulations. Deep well installation requires that the first 40-50 feet has to be encased in concrete to isolate surface water to not have any chance to get in contact with lower aquifers. A reputable well driller will follow those requirements and be aware of how far back from creek they have to be.

A new owner within the Site attended the meeting. Homestake/Barrick checks property ownership each year and updates mailings as needed.